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(54) Zero-IF transmitter with error correction

(57) A method for the correction of errors in a zero-IF transmitter using its SSB mode resides in the steps of successively a) reducing local oscillator (LO) feedthrough, b) effecting balancing of the amplitudes of quadrature channels I, Q and c) reducing the phase deviation from quadrature in the channels. The method requires the introduction of an additional signal path in the radio, using an auxiliary LO the frequency of which is offset from the rf oscillator frequency by a small amount, eg 2kHz, and an extra mixer 67 to mix, in a calibration mode, the transmitter output with the auxiliary oscillator signal to form baseband error signals S_i, S_q for feedback 65 to the digital signal processor 63. Recursive algorithms make adjustments so that a) a first error signal S_i indicative of LO feedthrough is minimised; b) the ratio S_i/S_q of peak detector outputs 60,62 is then adjusted to achieve channel balance; and c) a second error signal S_p indicative of deviation from phase quadrature is finally reduced to zero. The calibration is repeated for various LO frequencies and each result stored in RAM.

Fig.6

